

# CLAIMS

1. The use of either or both  $P_2O_5$  and  $B_2O_3$  as a component to improve the refractoriness of inorganic fibres comprising  $SiO_2$ , and CaO and/or MgO, to produce inorganic fibres having a composition having a shrinkage of less than 3.5% when exposed to  $1000^\circ C$  for 24 hours and having a shrinkage of less than 3.5% when exposed to  $800^\circ C$  for 24 hours, the fibres having a composition:-

$SiO_2$	44wt% or more
CaO	20 - 40wt%
MgO	0 - 18wt%
$P_2O_5$	0 - 12.5wt%
$B_2O_3$	0 - 4wt%

and in which

$$SiO_2 + P_2O_5 - (58 + (if MgO > 10, 0.5 \times (MgO - 10) \text{ else } 0)) > -2.4wt\%$$

2. The use of either or both  $P_2O_5$  and  $B_2O_3$  as a component to improve the refractoriness of inorganic fibres as claimed in claim 1 in which the percentage of non-bridging oxygens is less than 61.4%.
3. The use of either or both  $P_2O_5$  and  $B_2O_3$  as a component to improve the refractoriness of inorganic fibres as claimed in claim 1 in which the fibres fall within the compositional range:-

$SiO_2$	52 - <58wt% [52 - <58+0.5×(MgO-10)wt% if MgO > 10wt%]
CaO	22 - 40wt%
MgO	0 - 17.5wt%
MgO + CaO	< 42wt%
$P_2O_5$	0.5 - 10wt%
$B_2O_3$	0 - 2wt%

4. The use of either or both  $P_2O_5$  and  $B_2O_3$  as a component to improve the refractoriness of inorganic fibres in which the fibres fall within the compositional range:-

$SiO_2$	44.34 - 62.48
$CaO$	20.36 - 39.4wt%
$MgO$	0.62 - 21.16wt%
$P_2O_5$	0 - 12.01wt%
$B_2O_3$	0 - 3.54wt%

and in which

$$SiO_2 + P_2O_5 - (58 + (if MgO > 10, 0.5 \times (MgO - 10) \text{ else } 0)) > -2.4wt\%$$

5. Saline soluble inorganic fibres having a shrinkage of less than 3.5% when exposed to  $1000^\circ C$  for 24 hours and having a shrinkage of less than 3.5% when exposed to  $800^\circ C$  for 24 hours, in which:-

$$SiO_2 + P_2O_5 - (58 + (if MgO > 10, 0.5 \times (MgO - 10) \text{ else } 0)) > -2.4wt\%$$

and comprising:-

$SiO_2$	52 - <58wt% [52 - <58+0.5'(MgO-10)wt% if MgO > 10wt%]
$CaO$	22 - 40wt%
$MgO$	0 - 17.5wt%
$MgO + CaO$	< 42wt%
$P_2O_5$	0.5 - 10wt%
$B_2O_3$	0 - 2wt%

and in which the percentage of non-bridging oxygens calculated on the basis of the amounts of the above named components is less than 61.4%.

6. Saline soluble inorganic fibres having a shrinkage of less than 3.5% when exposed to  $1000^\circ C$  for 24 hours and having a shrinkage of less than 3.5% when exposed to  $800^\circ C$  for 24 hours, in which:-

$$SiO_2 + P_2O_5 - (58 + (if MgO > 10, 0.5 \times (MgO - 10) \text{ else } 0)) > -2.4wt\%$$

and comprising:-

$SiO_2$	44.34 - 62.48
$CaO$	20.36 - 39.4wt%
$MgO$	0.62 - 21.16wt%
and also comprising either or both of:-	
$P_2O_5$	0 - 12.01wt%
$B_2O_3$	0 - 3.54wt%

7. Saline soluble inorganic fibres having a shrinkage of less than 3.5% when exposed to 1000°C for 24 hours and having a shrinkage of less than 3.5% when exposed to 800°C for 24 hours, in which:-

$\text{SiO}_2 + \text{P}_2\text{O}_5 = (58 + (\text{if MgO} > 10, 0.5 \times (\text{MgO} - 10) \text{ else } 0)) \rightarrow - 2.4\text{wt\%}$

and comprising:-

$\text{SiO}_2$	52.4 - 57.85wt%
$\text{CaO}$	22.2 - 39.4wt%
$\text{MgO}$	1.96 - 17.4wt%
$\text{P}_2\text{O}_5$	0.82 - 7.8wt%
$\text{B}_2\text{O}_3$	0 - 1.95wt%
$\text{Al}_2\text{O}_3$	<1wt%

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